

5 **VIDEO COMPRESSION USING ADAPTIVE SELECTION OF GROUPS OF
FRAMES, ADAPTIVE BIT ALLOCATION, AND ADAPTIVE
REPLENISHMENT**

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Abstract of the Disclosure

The present invention provides video signal compression that efficiently groups pictures in a video stream into variably-sized groups of pictures (GOPs), thereby providing lower achievable output signal bit rates and higher output signal quality. The video signal compression maximizes the output signal quality by appropriately allocating bits among individual pictures and GOPs in the output signal. The video signal compression of the present invention also applies compression methods that reduce noise in the output signal, by utilizing a macroblock-based tunable conditional replenishment technique. The conditional replenishment technique exploits the similarities among images in the variably-sized GOPs to further minimize output bit rate and maximize the output signal quality. An analysis-by-synthesis method is also provided to select a best asynchronous sampling method among various generated candidate output streams.

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King & Spalding Matter No.: 07816.105004